STATISTICAL THEORY OF GRANULAR MATTER FLOW IN THE STICK-SLIP REGIME

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S u m m a r y

Consideration of both particle velocity fluctuations and elastic stresses allows one to present the transition of a granular matter into a fluid-like state within both steady-state and stick-slip regimes. In the last case, elastic stress fluctuations promote the appearance of self-organized criticality where the system evolution is characterized by the distribution of flow interval lengths. Its form is determined by a fractal Lorentz system with stochastic sources. The system evolution is reduced, in such a case, to a subdiffusion in the phase space with the probability of jumps defined in the Tsallis' form.